UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/918,642	08/01/2001	Yusaku Yamamoto	ASAM.0013	2652

7590 03/29/2006

Stanley P. Fisher
Reed Smith Hazel & Thomas LLP
Suite 1400
3110 Fairview Park Drive
Falls Church, VA 22042-4503

EXAMINER	
SCHUBERT, KEVIN R	
ART UNIT	**PAPER NUMBER**
2137	

DATE MAILED: 03/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/918,642	YAMAMOTO ET AL.	
	Examiner	Art Unit	
	Kevin Schubert	2137	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 February 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 9 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 9 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim 9 has been considered.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/7/06 has been entered.

Claim Objections

Claim 9 is objected to because of the following informalities: the phrase "with using a ciphering key" is awkward. Examiner suggests the cancellation of "with" or the cancellation of "using". Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsumoto (Matsumoto, Tsutomo; Kato, Koki; Imai, Hideki. Speeding up Secret Computations with Insecure Auxiliary Devices. Advances in Cryptology- Crypto '88, Springer-Verlag Berlin Heidelberg. 1990. pp. 497-506) in view of England, U.S. Patent No. 6,996,236.

As per claim 9, the applicant discloses the following limitations which are met by Matsumoto in view of England:

a) a client computer system that accepts a solving request of an optimization problem from a user (Matsumoto: page 500);

b) a server system that obtains a solution of the optimization problem, wherein the client computer system executes (Matsumoto: page 500);

(1) receiving an optimization problem represented by an equality constraint $Ax = b$ defined by a coefficient matrix A having m rows and n columns and an m-dimensional right hand side vector b, an inequality constraint $x \geq 0$, and an objective function f(x) to be minimized (Matsumoto: page 500);

(2) generating a nonsingular matrix P having m rows and m columns and a permutation matrix Q having n rows and n columns with using a ciphering key (Matsumoto: page 500; England: Col 12, lines 60-64);

(3) converting said optimization problem into another optimization problem having a different equality constraint $(PAQ)y = Pb$, a different inequality constraint $y \geq 0$, and a different objective function f(Qy), by using said nonsingular matrix P and said permutation matrix Q (Matsumoto: page 500);

(4) sending the converted optimization problem to the server system (Matsumoto: page 500);

(5) receiving a solution y of the converted problem from the server system (Matsumoto: page 500);

(6) reverse converting $x = Qy$ on the solution y by using the matrix Q and thereby finding a solution x of the optimization problem $Ax = b$ (Matsumoto: page 500);

wherein the server system executes:

(1) receiving the converted optimization problem including the equality constraint $(PAQ)y = Pb$, the inequality constraint $y \geq 0$, and the objective function f(Qy) (Matsumoto: page 500);

(2) finding a solution y of the converted problem (Matsumoto: page 500);

(3) sending the solution y to the client computer system (Matsumoto: page 500);

It should be noted that primary reference Matsumoto and the instant application attempt the same goal and provide the same solution (Specification: pages 5-6; Matsumoto: page 497-498). It should

further be noted that differences appear between the Matsumoto reference and the claimed invention. Specifically, Matsumoto relies on three matrices for enciphering a problem (P,Q, and R) while the applicant discloses the use of only two (P and Q). Additionally, Matsumoto discloses that A and B are matrices while Applicant disclose that A is a matrix and B is a vector (a one-dimensional matrix). Lastly, Applicant discloses that x is subject to inequality constraint $x \geq 0$ while Matsumoto does not disclose that x has to be positive.

Examiner respectfully submits that these three differences are minor implementation choices which do not patentably distinguish the claimed invention. As described in the language of 35 U.S.C. 103(a), "A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains". Examiner further notes motivation for making the alterations to Matsumoto, depending on the implementation circumstances of the system. For example, it would have been obvious to one of ordinary skill in the art at the time the invention was filed to use two matrices instead of three in a system which contains less processing capability and/or which seeks to curtail processing time.

Matsumoto, however, fails to disclose generating P and Q using a ciphering key. Matsumoto discloses that P and Q are randomly generated. Matsumoto is silent as to whether the random generation process utilizes a key. England discloses the well-known idea that a ciphering key may drive a random generator. It would have been obvious to one of ordinary skill in the art at the time the invention was filed to combine the ideas of England with those of Matsumoto and utilize a ciphering key in the random generation process because doing so is an effective means to create random values.

Response to Arguments

Applicant argues that claim 9 is patentable because Matsumoto does not disclose use of a ciphering key. This argument is moot in view of the new ground of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Schubert whose telephone number is (571) 272-4239. The examiner can normally be reached on M-F 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Emmanuel Moise can be reached on (571) 272-3865. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KS

EMMANUEL L. MOISE
SUPERVISORY PATENT EXAMINER